



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/706,044

11/13/2003

Hirotsushi Otsuki

1403-0258P

7114

2292 7590 01/24/2007  
BIRCH STEWART KOLASCH & BIRCH  
PO BOX 747  
FALLS CHURCH, VA 22040-0747

EXAMINER

MAKI, STEVEN D

ART UNIT

PAPER NUMBER

1733

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
--	-------------------	---------------

3 MONTHS

01/24/2007

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 01/24/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

# Office Action Summary

Application No.

10/706,044

Applicant(s)

OTSUKI, HIROTOSHI

Examiner

Steven D. Maki

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION:

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,5,7 and 9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,7 and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |  |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                        |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____   |

Art Unit: 1733

1) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2) **Claims 1, 2, 4, 5, 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto et al (US 6201049) in view of Japan 851 (JP 58-3851), the admitted prior art (page 9 line 23 to page 10 line 2) and Japan 957 (JP 2002-128957).**

Sakamoto et al discloses a rubber composition for a tire sidewall comprising

100 parts by weight diene rubber;

0.5-2.5 parts by weight wax;

3-7 parts by weight of an **antioxidant** containing 30-100% by weight of **N-(1-methylheptyl)-N'-phenyl-p-phenylenediamine**; and

0.8-1.8 parts by weight sulfur

wherein the diene rubber comprises a combination of butadiene rubber and natural rubber and when BR is used, the amount thereof is 50-80% by weight of the rubber.

See col. 1 lines 49-63, col. 2 lines 7-22. In example 3, the rubber composition comprises 40 parts NR (natural rubber) and 60 parts by weight BR (butadiene rubber).

The tire of example 3 has the highest crack resistance of 5 (no cracks). Examples 2 and 3 of Sakamoto et al shows that crack resistance is improved by using 60% butadiene rubber and 40% natural rubber (no cracks, example 3) instead of 60% natural rubber and 40% butadiene rubber (small cracks observed slightly, example 2). The

Art Unit: 1733

rubber composition is superior in ozone crack resistance and is resistant to brown and white discoloration. See col. 1 lines 43-46, examples. Sakamoto et al teaches an invention example wherein a rubber sheet comprising the rubber composition was patched on a tire sidewall and then vulcanized to make a tire having a size of 285/75R24.5 (a pneumatic radial tire). The rubber sheet has a thickness of 3.5 mm and a width of 200 mm. See col. 4 lines 32-37. Sakamoto et al does not specifically recite providing the rubber sheet containing diene rubber and the antioxidant N-(1-methylheptyl)-N'-phenyl-p-phenylenediamine with a thickness of 0.5-5 mm and a width of 20-100 mm and locating the rubber sheet on the buttress of a pneumatic tire.

As to claim 1, it would have been obvious to one of ordinary skill in the art to provide Sakamoto et al's rubber sheet containing antioxidant with a thickness of 0.5-5 mm and a width of 20-100 mm

and

locate the rubber sheet on the buttress of a pneumatic tire

since (1) Sakamoto et al suggests locating the rubber sheet, which may have a thickness of 3.5 mm and a width of 200 mm, on a tire sidewall of a pneumatic tire so that the tire has *ozone crack resistance* and resistance to brown and white discoloration and (2) Japan 851 suggests preventing flow *crack* at the edge of a tread rubber layer of a radial tire by locating a rubber sheet containing antioxidant at the buttress of a pneumatic tire (figure 1) wherein the rubber sheet has a thickness G of 1.5-4.0 mm and a width L of 25-75 mm (figure 2, page 265 top left column).

Furthermore, it would have been obvious to one of ordinary skill in the art to provide Sakamoto's antioxidant **N-(1-methylheptyl)-N'-phenyl-p-phenylenediamine adsorbed on silica** as claimed since:

(1) Sakamoto, which teaches that **silica** may be included in the rubber composition (col.3 lines 43-49), suggests using **N-(1-methylheptyl)-N'-phenyl-p-phenylenediamine** such as OZONONE 35 from SEIKO CHEMICAL CO. LTD. as the antioxidant (col. 4 lines 22-24);

(2) the admitted prior art teaches that known antioxidant's available from SEIKO CHEMICAL CO., LTD. include Antioxidant 35 (**N-(1-methylheptyl)-N'-phenyl-p-phenylenediamine**) and Antioxidant 35-PR (**mixture of N-(1-methylheptyl)-N'-phenyl-p-phenylenediamine and silica**, in a solid state at 40°C or lower, proportion of silica: approximately 33% by weight, CTAB absorption amount of silica: 165m<sup>2</sup>/g);

and

(3) Japan 957 suggests bonding a group having anti-aging action to silica to provide an antioxidant which inhibits migration to the surface of a rubber article and thereby reduces the fall of aging prevention ability.

One of ordinary skill in the art would have been motivated to use the commercially available 8PPD adsorbed silica in a Sakamoto et al's composition for tire sidewall and specifically to use it for Sakamoto et al's antioxidant since (1) Sakamoto et al, directed to the tire art, teaches that the **antioxidant** contains 30-100% by weight of N-(1-methylheptyl)-N'-phenyl-p-phenylenediamine such as *8PPD (OZONONE 35) from Seiko*

Art Unit: 1733

*Chemical Co., Ltd.* and (2) the commercially available *8PPD adsorbed silica* (*Antioxidant 35-PR*) from *Seiko Chemical Co., Ltd.* comprises N-(1-methylheptyl)-N'-phenyl-p-phenylenediamine adsorbed on silica. This is especially true since Japan 957 recommends bonding aromatic amine based antioxidant residue group (e.g. N-phenyl-p-phenylene diamine residual group) to silica. The result of improved performance of antioxidant by adsorbing the antioxidant on the silica is the expected result. See Japan 957. In particular, note Japan 957's teaching that by bonding the antioxidant residual group to silica, migration of the antioxidant to the surface of the article is prevented so as to avoid spoiling of appearance and falling of aging prevention ability. Compare the disclosure of Japan 957 with page 5 lines 11-13 of specification.

With respect to the diene rubber comprising 50-80% by weight butadiene rubber and 20-40% by weight natural rubber, Sakamoto et al suggests the claimed amounts of butadiene rubber and natural rubber. In particular, Sakamoto teaches diene rubber comprising 50-80% by weight of the butadiene rubber and 20-50% by weight of natural rubber. At col. 2 lines 13-15, Sakamoto et al teaches using a combination of NR (natural rubber) and BR (butadiene rubber) to improve cut growth resistance (col. 2 lines 13-15). At col. 2 lines 17-21, Sakamoto et al specifically teaches using an amount of 50-80% butadiene rubber. In example 3, the rubber composition comprises 60% butadiene rubber and 40% by weight natural rubber. Examples 2 and 3 of Sakamoto et al shows that crack resistance is improved by using 60% butadiene rubber and 40% natural rubber (no cracks, example 3) instead of 60% natural rubber and 40% butadiene rubber (small cracks observed slightly, example 2).

Art Unit: 1733

In view of Sakamoto et al's disclosure, one of ordinary skill in the art would expect crack resistance to improve when using 50-80% by weight BR and 20-40% by weight NR compared to a composition having a higher percentage of NR.

As to claim 2, Sakamoto et al teaches using 0.8-1.8 parts by weight sulfur.

As to claims 4 and 5, the admitted prior art teaches that Antioxidant 35-PR has approximately 33% by weight silica.

As to claims 7 and 9, Sakamoto et al suggests using 3-7 parts antioxidant.

Remarks

3) Applicant's arguments filed 11-13-06 have been fully considered but they are not persuasive.

The 132 declaration filed 11-13-06, the 132 declaration filed 5-12-06 and the examples in the specification have been considered but are not persuasive of non-obviousness. **The result of improved performance of antioxidant by adsorbing the antioxidant on the silica is the expected result. See paragraphs 2 and 5 of machine translation of Japan 957.** Compare the disclosure of Japan 957 with page 5 lines 11-13 of specification. **The result of improved cracking resistance by using 50-80% BR and 20-40% NR instead of 100% NR is the expected result. See col. 2 lines 13-21 and compare examples 2 and 3 of Sakamoto et al.**

Applicant argues that Sakamoto fails to disclose the use of 8PPD-adsorbed silica. More properly, Sakamoto discloses "8PPD" antioxidant and the admitted prior art teaches "8PPD" antioxidant adsorbed onto silica. One of ordinary skill in the art would

Art Unit: 1733

expect "8PPD adsorbed onto silica" would have longer aging prevention ability (greater crack resistance) than "8PPD" in view of the teachings of Japan 957.

Applicant argues that the admitted prior art and Japan 851 do not suggest employing "8PPD adsorbed silica" in a thin film layer on the buttress of a tire. This argument is not persuasive since (1) Sakamoto discloses using "8PPD" antioxidant in a layer on the tire and (2) the admitted prior art and Japan 957 motivate one of ordinary skill in the art to use "8PPD adsorbed silica" instead of "8PPD".

Applicant argues that Japan 957 does not recognize the importance of the specific rubber composition. This argument is not persuasive since (1) Sakamoto teaches using 50-80% BR and a corresponding lesser amount of NR to improve cut growth resistance / crack resistance and (2) Japan 957 recognizes the importance (improved anti-aging ability) of adsorbing aromatic amine based antioxidant residual group on silica.

4) No claim is allowed.

5) **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of



Art Unit: 1733

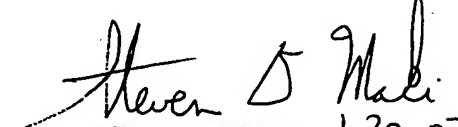
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Steven D. Maki  
January 20, 2007

  
**STEVEN D. MAKI** 1-20-07  
**PRIMARY EXAMINER**